

REMARKS

By this Amendment, claims 20, 22 and 35-38 are amended merely for clarity, and no new matter is presented. Claims 20-23, 30 and 32-38 were elected and are pending. Reconsideration and allowance of the present application based on the above amendments and the following remarks is respectfully requested.

Claims Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 20-23, 30, and 32-38 were rejected under 35 U.S.C. § 112, first paragraph. The Office Action alleges that the limitations of claim 20 and 22 contain new matters and that claims 21, 23, 30, and 32-38 contain new matters because they depend from claim 20 and 22.

Reconsideration and withdrawal of the rejection are respectfully requested because currently amended claims 20 and 22 are fully supported by Applicant's specification as originally filed.

The specification as originally filed supports the limitations of currently amended claims 20 and 22 as follows.

(1) Regarding the limitation that the thin metal film has a homogenous composition throughout a whole thickness of the thin metal film, the specification inherently discloses a method for forming a thin metal having a homogenous composition throughout a whole thickness of the thin metal film. Regarding the limitation that the thin metal has a color similar to chrome, the specification states at page 18, lines 6-7, the thin titanium alloy film had an external appearance similar to that of electro chromium plating, which supports the claim recitation of having a color similar to chrome.

(2) Regarding the limitation that a single sintered target is used, specification discloses that a sintered target is used, which supports the claim recitation of a single sintered target.

(3) Regarding the limitation that a vacuum atmosphere is used, the specification discloses in examples that low pressures are used, for example, 2.5×10^{-3} Torr.

In view of the foregoing, currently amended claims 20 and 22 are fully supported by Applicant's specification as originally filed.

Therefore, withdrawal of the rejection is respectfully requested.

Claims Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 20-23, 30, and 32-38 were rejected under 35 U.S.C. 112, second paragraph.

Claims 20 and 22 have been amended to remove the term "pure" from the phrase "pure chrome" and the term "-type" from the phrase "arc-type." In addition, claims 35-38 have been amended to add the phrase "one or more of the group consisting of" after the phrase "selected from."

Therefore, withdrawal of the rejection of claims 20-23, 30 and 32-38 are respectfully requested.

Withdrawal of 103(a) Rejections

The Office Action states at page 4, lines 4-7 that all 103(a) rejections of claims 20-23, 30 and 32-25 involving US 6,068,890 to Käumle et al. (hereinafter "Käumle") in view of US 5,656,335 to Schwing et al. (hereinafter "Schwing") are withdrawn in light of the amendment to claims 20 and 22 to require that deposition to occur in "nitrogen-free vacuum atmosphere".

Although currently amended claims 20 and 22 do not use the term "nitrogen-free" itself, previous 103(a) rejections should remain withdrawn as in the Office Action, at least because of the following reasons.

Käumle discloses a method where nitrogen reacts with titanium in the magnetron atomization in a chamber having nitrogen as the reactive atmosphere. In this method, titanium nitride (TiN) is formed and a violet color is produced. Thus, a color similar to chrome will never be produced by the disclosed method. In order to obtain a color similar to chrome, modifying the disclosed method is at least necessary.

However, Käumle does not teach or suggest to modify the disclosed method where nitrogen is reacting with titanium to form titanium nitride (TiN) into a method having the following combined limitations: (1) “forming a thin metal film having a homogenous composition throughout a whole thickness of said thin metal film and having a color similar to chrome” and (2) “wherein the thin metal film is made from a titanium-aluminum alloy containing 20-50% by weight of titanium and 80-50% by weight of aluminum formed by any one of cathode arc ion plating and sputtering using a single sintered target containing 20%-50% by weight of titanium and 80%-50% by weight of aluminum.”

On the contrary, Käumle teaches away from the adoption of the above combined limitations, by actively teaching the advantage of nitrogen reacting with titanium when aluminum and titanium are used (a titanium-aluminum-nitrogen system) and by actively teaching the use of other nitrogen systems (zirconium-aluminum-nitrogen systems, titanium-zirconium-nitrogen systems, etc.) when a person wishes to obtain other colors that titanium-aluminum-nitrogen systems do not produce. For example, Käumle states:

“The method employing a system with titanium-aluminum-nitrogen has proven especially advantageous. For example, aluminum and titanium are used as targets in the magnetron atomization in a chamber having nitrogen as the reactive atmosphere. A great many different colors can be produced with this method alone. However, there are other systems, zirconium-aluminum-nitrogen and titanium-zirconium-nitrogen for example, that

can be used to make other colors. Still other colors can be produced by using copper or brass.” (Column 4, lines 56-60).

At least the Office Action does not show that Käumle or Schwing teaches or suggests why a person skilled in the art will be motivated to modify the disclosed method to have the above combined limitations recited in claims 20 and 22.

Therefore, the Office Action fails to provide a prima face case of obviousness.

Furthermore, the Office Action simply states at page 4, lines 9-10, “Using only one target rather than two targets is obvious.”

However, what claims 20 and 22 refer to is not just one target. Claims 20 and 22 refer to a single sintered target.

Käumle merely discloses one metal (aluminum) is used as one target and the other metal (titanium) is used as the other target. The Office Action does not show that the combination of Käumle and Schwing teaches or suggests why a person skilled in the art will be motivated to modify the method of Käumle to adopt a single sintered target without hindsight, instead of the use of two separate 1-metal targets.

Moreover, the Office Action does not show that the combination of Käumle and Schwing teaches or suggests why a person skilled in the art will be motivated to modify the method of Käumle to specifically adopt a single sintered target containing 20%-50% by weight of titanium and 80%-50% by weight of aluminum without hindsight, instead of the use of two separate 1-metal targets.

Therefore, the Office Action fails to provide a prima face case of obviousness.

In view of the foregoing, independent claims 20 and 22 are allowable. Claims 21, 23, 30 and 32-35 are allowable at least because they depend from claims 20 and 22 and contain

all of the limitations of claims 20 and 22. Therefore, all 103(a) rejections of claims 20-23, 30 and 32-25 should remain to be withdrawn.

Conclusion

All rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,
PILLSBURY WINTHROP LLP

By: 

Dale S. Lazar

Reg. No.: 28,872

Tel. No.: (703) 905-2126

Fax No.: (703) 905-2500

DSL/yo
1600 Tysons Boulevard
McLean, VA 22102
(703) 905-2000